



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,735	03/16/2004	Seung-un Kim	239/166 DIV	1171

7590 03/28/2005

LEE & STERBA, P.C.  
SUITE 2000  
1101 WILSON BOULEVARD  
ARLINGTON, VA 22209

EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
----------	--------------

1763

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

64

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/800,735	KIM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sylvia R MacArthur	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

7c

## DETAILED ACTION

### *Drawings*

1. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Specifically, applicant claims injecting a gas, but fails to illustrate such gas injection in the figures.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16-18 and 21, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanoue et al (US 6,319,099) in view Choi et al (US 6,231,672) and Custer et al (US 6,206,757).

Tanoue et al teaches an apparatus and method for feeding slurry.

Regarding claims 16 and 21: Tanoue et al further teaches a method of supplying chemical solutions to a chemical injection part in a semiconductor manufacturing process, comprising:

Art Unit: 1763

Supplying a plurality of chemical solutions from a corresponding plurality of chemical solution supply sources (bottle 1 and 2);

Respectively providing a pressure to a plurality of chemical solution supply sources (see col. 3 lines 10-14); recycling the plurality of chemical solutions from the plurality of chemical solution supply sources through a corresponding plurality of recycle lines (13a and 13c see col. 7 lines 1-14) and preventing coagulation of the plurality of chemical solutions (see col. 8 lines 39-45), the plurality of recycle lines being connected to an associated plurality of chemical solution supply sources;

Injecting the plurality of chemical solutions from the chemical solution supply sources into a chemical injection part (3a, 3c, and 3e) through a plurality of branch lines using the pressure; and respectively measuring/controlling flow rates of the plurality of chemical solutions supplied to the chemical solution injection part, flow rate control valves 7a-7d, 7g-7j, 7x, and 7y).

Tanoue et al fails to teach a plurality of supply sources.

Choi et al teaches an apparatus for depositing thin films on a semiconductor wafer by continuous gas injection as substantiated by the specification of the present invention. Fig. 2 teaches chemical supply sources 116 and 126 and gas sources 1110, 1120, and 1130. The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

Tanoue et al and Choi et al fail to teach injecting a gas.

Custer et al illustrates gas injection into a liquid in Fig.3. Therein the gas 60 injected into a chemical source 54 and the solution is transported to the polishing apparatus 56.

Art Unit: 1763

The motivation to provide the teachings of Custer et al in the apparatus of Tanoue et al and Choi et al is that the gas injection provides for a controlled pressure of liquid and gas as discussed in col. 4 lines 24-30. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the teachings of the Custer et al in the method of Tanoue et al modified by Choi et al.

Regarding claim 17: Tanoue et al teaches a method of supplying chemical solutions further comprising a step of mixing the measured/controlled chemical solutions just before supplying the chemical solutions to the chemical solution injection part, see Fig. 1. Choi teaches different gases col. 1 lines 29-41.

Regarding claims 18 and 22: Tanoue et al teaches the step of respectively measuring/controlling the flow rates comprising the steps of a) detecting the flow rates of chemical solutions flowing into the feed lines and generating flow rate data signals indicating the detected flow rates of each respective chemical solution; and b) controlling the flow rate control valves by means of the control signals to control the flow rate of the chemical solutions, see col. 7 lines 34-53.

Regarding claim 25: Tanoue et al teaches the reaction reagent and friction particles make up the slurry, see col. 8 lines 14-38.

4. Claims 19, 20, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanoue et al (US 6,319,099), Choi et al, and Custer et al as applied in claims 16-18, 21,22, and 25 above, in further view of Karlsrud et al (US 5,498,196).

The teachings of Tanoue et al,Choi et al, and Custer et al were discussed above.

Art Unit: 1763

Regarding claims 19 and 23: Tanoue et al and Choi et al fail to teach displaying the measured flow rates.

Karlsruh et al teaches the method and apparatus is controlled by the computer 103. Computers are known in the art to comprise monitors or display means as an interface between the data and the operator. The motivation to provide a display means in the method of Tanoue et al and Choi et al is that it provides a real-time means of monitoring the progress of the manufacturing process and allows one to act accordingly. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the process of Tanoue et al with the display means of Karlsruh et al.

Regarding claims 20 and 24: Tanoue et al and Choi et al fail to teach a step of generating an alarm for warning an operator when the measured flow rate exceeds a permissible error range of a required flow rate.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 1763


CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Applicant's arguments with respect to claims 16-20 have been considered but are moot in view of the new ground(s) of rejection. The limitation requiring that the gas be injected is suggested by the combination of Tanoue et al, Choi et al, and Custer et al.

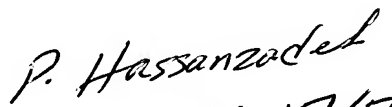
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

March 21, 2005

  
SPE, AU 1763